

9. PROJECTED IMPACT ON WATER RATES

An economic assessment of each alternative and its impact on the current financial situation is a critical component to the selection of any alternative. This chapter presents a preliminary estimate of the impact that each alternative discussed previously would have on CBU's water rates. For the purposes of this evaluation, the following projections and assumptions have been made, and will be outlined further in this chapter:

- The full capital costs of each alternative.
- The annual debt service and debt service coverage requirements.
- The incremental cost of operating and maintaining the proposed facilities.
- The total projected incremental annual costs at Year 2002 cost levels compared to projected annual water service revenues under existing rates.
- The total projected incremental annual costs inflated to Year 2008 levels compared to projected Year 2008 water rates.

A. SUMMARY OF PROBABLE CAPITAL COSTS

Presented in Tables 9-1 through 9-3b are the probable capital costs associated with each of the three alternatives and options discussed previously in this report. The costs include the probable construction costs presented in Tables 8-1 through 8-6, in Year 2002 dollars, and estimated Year 2006 figures adjusted for inflation. Construction for all alternatives is assumed to begin in 2006 with facility startup targeted for 2008.

The following costs factor into the total costs for each alternative as outlined in Tables 9-1 through 9-3b.

- Probable construction costs include a 20 percent allowance for contingencies, as discussed in Chapter 8.

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- For Alternative A, land costs associated with the Southeast Water System Improvements are estimated at \$50,000 and easement costs are assumed to be \$250,000. No land cost for the Alternative A WTP or intake has been included because all work will be performed on existing land owned by CBU. Under Alternative B, the maximum probable cost of land for the intake facility is \$150,000 and for the treatment plant site is \$450,000. For Alternative C, the cost of land for the new treatment plant and collector well is estimated to be \$450,000 and \$150,000, respectively.
- Pilot studies for the MF/UF membrane and RO facilities under Alternative C will be required. The probable cost of these pilot studies is \$350,000. Additionally, a well study is also necessary to obtain capacity and water quality information. This study is estimated at \$50,000.
- The probable construction costs provided in Tables 8-1 through 8-6 do not include any allowance for administration, legal, engineering costs, CBU staff salaries and expenses related to the project, and subsurface investigations. An allowance of 15 percent of probable construction cost is considered reasonable for such costs.

The probable total cost for the raw water mains and finished water mains in each alternative were similarly developed. Factors considered include the following:

- Total allowances for the raw water and finished water mains vary for each Alternative based on the length of mains required.
- An allowance of 15 percent of probable construction costs for administration, legal, engineering costs, CBU staff salaries and expenses related to the project, and subsurface investigations.

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Table 9-1
Summary of Probable Capital Costs
Alternative A

Line No.	Item	2002 Cost	2006 Cost
Intake Facility and Monroe WTP			
1	Probable Construction Cost ^(a)	\$27,000,000	\$30,389,000
2	Other ^(b)	4,050,000	4,558,000
3	Subtotal Intake Facility and Monroe WTP	31,050,000	34,947,000
Raw and Finished Water Mains			
4	Probable Construction Cost ^(a)	6,000,000	6,753,000
5	Easements	120,000	135,000
6	Other ^(b)	900,000	1,013,000
7	Subtotal Raw and Finished Water Mains	7,020,000	7,901,000
Southeast Water System Improvements			
8	Probable Construction Cost ^(a)	13,200,000	14,857,000
9	Land	50,000	56,000
10	Easements	250,000	281,000
11	Other ^(b)	1,980,000	2,229,000
12	Subtotal Southeast Water System Improvements	15,480,000	17,423,000
13	Subtotal Probable Capital Costs	53,550,000	60,271,000
14	Debt Issuance Costs ^(c)	5,420,000	6,101,000
15	Total Probable Project Capital Costs	\$58,970,000	\$66,372,000
16	Annual Debt Service ^(d)	3,946,000	4,441,000
17	Debt Service Coverage Requirement ^(e)	987,000	1,110,000

(a) From Table 8-1.

(b) Represents OH and engineering costs. Estimated at 15% of construction cost.

(c) Estimated @ 2.5% of total bond issuance. Includes debt service reserve requirements.

(d) Equal annual debt service payments with a 5.25% interest rate and a term of 30 years.

(e) Equal to 25% of annual debt service payment.

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Table 9-1a
Summary of Probable Capital Costs
Option to Alternative A

Line No.	Item	2002 Cost	2006 Cost
Intake Facility and Monroe WTP			
1	Probable Construction Cost ^(a)	\$20,640,000	\$23,231,000
2	Other ^(b)	3,096,000	3,485,000
3	Subtotal Intake Facility and Monroe WTP	23,736,000	26,716,000
Raw and Finished Water Mains			
4	Probable Construction Cost ^(a)	6,000,000	6,753,000
5	Easements	120,000	135,000
6	Other ^(b)	900,000	1,013,000
7	Subtotal Raw and Finished Water Mains	7,020,000	7,901,000
Southeast Water System Improvements			
8	Probable Construction Cost ^(a)	13,200,000	14,857,000
9	Land	50,000	56,000
10	Easements	250,000	281,000
11	Other ^(b)	1,980,000	2,229,000
12	Subtotal Southeast Water System Improvements	15,480,000	17,423,000
13	Subtotal Probable Capital Costs	46,236,000	52,040,000
14	Debt Issuance Costs ^(c)	4,680,000	5,268,000
15	Total Probable Project Capital Costs	\$50,916,000	\$57,308,000
16	Annual Debt Service ^(d)	3,407,000	3,835,000
17	Debt Service Coverage Requirement ^(e)	852,000	959,000

(a) From Table 8-2.

(b) Represents OH and engineering costs. Estimated at 15% of construction cost.

(c) Estimated @ 2.5% of total bond issuance. Includes debt service reserve requirements.

(d) Equal annual debt service payments with a 5.25% interest rate and a term of 30 years.

(e) Equal to 25% of annual debt service payment.

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Table 9-2
Summary of Probable Capital Costs
Alternative B

Line No.	Item	2002 Cost	2006 Cost
Intake Facility and New WTP			
1	Probable Construction Cost ^(a)	\$36,000,000	\$40,518,000
2	Land ^(b)	600,000	600,000
3	Other ^(c)	5,400,000	6,078,000
4	Subtotal Intake Facility and New WTP	42,000,000	47,196,000
Raw and Finished Water Mains			
5	Probable Construction Cost ^(a)	12,000,000	13,506,000
6	Easements	270,000	304,000
7	Other ^(c)	1,800,000	2,026,000
8	Subtotal Raw and Finished Water Mains	14,070,000	15,836,000
Retrofit Monroe WTP			
9	Probable Construction Cost ^(a)	14,400,000	16,207,000
10	Other ^(c)	2,160,000	2,431,000
11	Subtotal Monroe WTP Retrofit	16,560,000	18,638,000
12	Subtotal Probable Capital Costs	72,630,000	81,670,000
13	Debt Issuance Costs ^(d)	7,352,000	8,267,000
14	Total Probable Project Capital Costs	\$79,982,000	\$89,937,000
15	Annual Debt Service ^(e)	5,352,000	6,018,000
16	Debt Service Coverage Requirement ^(f)	1,338,000	1,505,000

(a) From Table 8-3.

(b) Estimated cost of new Treatment Plant site and IDNR intake site.

(c) Represents OH and engineering costs. Estimated at 15% of construction cost.

(d) Estimated @ 2.5% of total bond issuance. Includes debt service reserve requirements.

(e) Equal annual debt service payments with a 5.25% interest rate and a term of 30 years.

(f) Equal to 25% of annual debt service payment.

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Table 9-3
Summary of Probable Capital Costs
Alternative C

Line No.	Item	2002 Cost	2006 Cost
Collector Well and New WTP			
1	Probable Construction Cost ^(a)	\$40,440,000	\$45,516,000
2	Land ^(b)	600,000	675,000
3	Collector Well Study	50,000	56,000
4	MF/UF Membranes & RO Pilot Study	350,000	394,000
5	Other ^(c)	<u>6,066,000</u>	<u>6,827,000</u>
6	Subtotal Collector Well and New WTP	47,506,000	53,468,000
Raw and Finished Water Mains			
7	Probable Construction Cost ^(a)	19,200,000	21,610,000
8	Easements	510,000	574,000
9	Other ^(c)	<u>2,880,000</u>	<u>3,242,000</u>
10	Subtotal Raw and Finished Water Mains	22,590,000	25,426,000
Retrofit Monroe WTP			
11	Probable Construction Cost ^(a)	14,400,000	16,207,000
12	Other ^(c)	<u>2,160,000</u>	<u>2,431,000</u>
13	Subtotal Monroe WTP Retrofit	16,560,000	18,638,000
14	Subtotal Probable Capital Costs	86,656,000	97,532,000
15	Debt Issuance Costs ^(d)	<u>8,771,000</u>	<u>9,872,000</u>
16	Total Probable Project Capital Costs	\$95,427,000	\$107,404,000
17	Annual Debt Service ^(e)	6,386,000	7,187,000
18	Debt Service Coverage Requirement ^(f)	1,597,000	1,797,000

(a) From Table 8-4.

(b) Estimated cost of new Treatment Plant site and collector well site.

(c) Represents OH and engineering costs. Estimated at 15% of construction cost.

(d) Estimated @ 2.5% of total bond issuance. Includes debt service reserve requirements.

(e) Equal annual debt service payments with a 5.25% interest rate and a term of 30 years.

(f) Equal to 25% of annual debt service payment.

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Table 9-3a
Summary of Probable Capital Costs
Option 1 to Alternative C

Line No.	Item	2002 Cost	2006 Cost
Collector Well and New WTP			
1	Probable Construction Cost ^(a)	\$34,800,000	\$39,168,000
2	Land ^(b)	600,000	675,000
3	Collector Well Study	50,000	56,000
4	RO Pilot Study	200,000	225,000
5	Other ^(c)	5,220,000	5,875,000
6	Subtotal Collector Well and New WTP	40,870,000	45,999,000
Raw and Finished Water Mains			
7	Probable Construction Cost ^(a)	19,200,000	21,610,000
8	Easements	510,000	574,000
9	Other ^(c)	2,880,000	3,242,000
10	Subtotal Raw and Finished Water Mains	22,590,000	25,426,000
Retrofit Monroe WTP			
11	Probable Construction Cost ^(a)	14,400,000	16,207,000
12	Other ^(c)	2,160,000	2,431,000
13	Subtotal Monroe WTP Retrofit	16,560,000	18,638,000
14	Subtotal Probable Capital Costs	80,020,000	90,063,000
15	Debt Issuance Costs ^(d)	8,100,000	9,116,000
16	Total Probable Project Capital Costs	\$88,120,000	\$99,179,000
17	Annual Debt Service ^(e)	5,897,000	6,637,000
18	Debt Service Coverage Requirement ^(f)	1,474,000	1,659,000

(a) From Table 8-5.

(b) Estimated cost of new Treatment Plant site and collector well site.

(c) Represents OH and engineering costs. Estimated at 15% of construction cost.

(d) Estimated @ 2.5% of total bond issuance. Includes debt service reserve requirements.

(e) Equal annual debt service payments with a 5.25% interest rate and a term of 30 years.

(f) Equal to 25% of annual debt service payment.

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Table 9-3b
Summary of Probable Capital Costs
Option 2 to Alternative C

Line No.	Item	2002 Cost	2006 Cost
Intake Facility Well and New WTP			
1	Probable Construction Cost ^(a)	\$30,000,000	\$33,765,000
2	Land ^(b)	600,000	675,000
3	Pilot Study	350,000	394,000
4	Other ^(c)	4,500,000	5,065,000
5	Subtotal Intake Facility and New WTP	35,450,000	39,899,000
Raw and Finished Water Mains			
6	Probable Construction Cost ^(a)	2,040,000	2,296,000
7	Easements	270,000	304,000
8	Other ^(c)	306,000	344,000
9	Subtotal Raw and Finished Water Mains	2,616,000	2,944,000
Retrofit Monroe WTP			
10	Probable Construction Cost ^(a)	14,400,000	16,207,000
11	Other ^(c)	2,160,000	2,431,000
12	Subtotal Monroe WTP Retrofit	16,560,000	18,638,000
13	Subtotal Probable Capital Costs	54,626,000	61,481,000
14	Debt Issuance Costs ^(d)	5,529,000	6,223,000
15	Total Probable Project Capital Costs	\$60,155,000	\$67,704,000
16	Annual Debt Service ^(e)	4,025,000	4,531,000
17	Debt Service Coverage Requirement ^(f)	1,006,000	1,133,000

(a) From Table 8-6

(b) Estimated cost of new Treatment Plant site and IDNR intake site.

(c) Represents OH and engineering costs. Estimated at 15% of construction cost.

(d) Estimated @ 2.5% of total bond issuance. Includes debt service reserve requirements.

(e) Equal annual debt service payments with a 5.25% interest rate and a term of 30 years.

(f) Equal to 25% of annual debt service payment.

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The financial analysis presented in this report assumes that CBU will use revenue bonds to finance the selected alternative. The cost of using this debt instrument is included as a separate line item cost in each table. It should be noted that alternative financing mechanisms such as the use of State Revolving Fund (SRF) monies may result in lower or higher water rate impacts, depending on bond market conditions.¹ Currently, CBU qualifies for SRF funds within the lowest interest rate tier – 3.3 percent.

Tables 9-1 through 9-3b assume revenue bond issuance costs of 2.5 percent and a debt service reserve equal to one-year of principal and interest (P&I) payments. The annual debt service for the revenue bonds assumes equal annual debt service payments with an average interest rate of 5.25 percent over a period of 30 years.

In addition to having sufficient revenues to meet debt service and operation and maintenance expenses, the revenue bond ordinances require additional revenues equal to at least 25 percent of the annual debt service costs. This additional revenue ensures that revenues will be sufficient to meet all of the requirements of the utility. Revenues that are not needed for operation and maintenance expense or debt service may be retained or used for cash financed capital improvements. The debt service coverage requirement is also provided as a separate line item cost on the tables.

B. PROBABLE INCREMENTAL OPERATION AND MAINTENANCE EXPENSE

For all alternatives with a new WTP, additional employees to operate and maintain the plant are required. Expenses at the new WTP for cost items such as power for low and high service water pumping and chemicals would be essentially the same if the water is being produced at the Monroe WTP or the new WTP. Other expenses, such as plant utilities, general materials and

¹ Impact of the I69 project has not been considered. Financing incentives may be offered in the future.

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supplies, and vehicle costs represent added expenses. For Alternative C, the operation and maintenance costs for the reverse osmosis facility are also provided. The probable incremental annual operation and maintenance expense for each alternative is presented in Table 9-4. The probable costs are at Year 2002 cost levels and are based on the budgeted costs for similar items at the Monroe WTP.

Table 9-4
Probable Incremental Operation & Maintenance Expense

Item	Quantity	Alternative			
		B	C	Option 1 to C	Option 2 to C
Additional Plant Operators	4	\$199,000	\$190,000	\$190,000	\$190,000
Additional Maintenance Personnel	1	46,000	46,000	46,000	46,000
Utilities		50,000	50,000	35,000	5,000
Materials & Supplies		69,000	50,000	50,000	69,000
Membrane Materials & Supplies		0	150,000	0	0
RO Materials & Supplies		0	344,000	344,000	0
Vehicles		10,000	10,000	10,000	10,000
Total		\$320,000	\$840,000	\$675,000	\$320,000

It is projected that four additional plant operators will be needed to provide full time staffing at the new WTP at an annual cost of \$190,000 for wages and benefits. The addition of one maintenance employee is also projected at an annual cost of \$46,000. Annual allowances of \$5,000 for general utilities, \$69,000 for materials and supplies (other than treatment chemicals), and \$10,000 for vehicles are shown in Table 9-4. For Alternative C and Option 1 to Alternative C, an annual allowance of \$50,000 is assumed for materials and supplies. Additional allowances for utilities (primarily electricity), membrane materials and RO-related supplies are included for Alternative C and Option 1 to Alternative C.

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C. PROJECTED IMPACT ON WATER RATES

The projected impact on water rates for each alternative is summarized on Table 9-5 based on Year 2002 cost levels and existing rates, Year 2008 projected cost levels and projected Year 2008 water rates.

Table 9-5
Summary of Impact on Water Rates

Line		Alternatives					
No.	Description	A	Option to A	B	C	Option 1 to C	Option 2 to C
	Impact on Current Rates						
1	Total Annual Debt Service ^(a)	3,946,000	3,407,000	5,352,000	6,386,000	5,897,000	4,025,000
2	Debt Service Coverage ^(a)	987,000	852,000	1,338,000	1,597,000	1,474,000	1,006,000
3	Incremental O&M Expense ^(b)	0	0	320,000	840,000	675,000	320,000
4	Total Annual Incremental Cost	4,933,000	4,259,000	7,010,000	8,823,000	8,046,000	5,351,000
5	Projected Yr 2002 Revenues under Existing Rates ^(c)	9,669,700	9,669,700	9,669,700	9,669,700	9,669,700	9,669,700
	Total Annual Incremental Cost @ Yr 2002 Levels as a Percentage of Revenues under Existing Rates	51.0%	44.0%	72.5%	91.2%	83.2%	55.3%
	Impact on Yr 2008 Rates						
7	Total Annual Debt Service ^(a)	4,441,000	3,835,000	6,018,000	7,187,000	6,637,000	4,531,000
8	Debt Service Coverage ^(a)	1,110,000	959,000	1,505,000	1,797,000	1,659,000	1,133,000
9	Incremental O&M Expense ^(b)	0	0	360,000	945,000	760,000	360,000
10	Total Annual Incremental Cost	5,551,000	4,794,000	7,883,000	9,929,000	9,056,000	6,024,000
11	Projected Yr 2008 Revenues, without Additional Plant, with Rates Adopted Yr 2004 ^(d)	10,830,100	10,830,100	10,830,100	10,830,100	10,830,100	10,830,100
12	Projected Additional Increase in Water Rates for New WTP Plant in Yr 2008.	51.3%	44.3%	72.8%	91.7%	83.6%	55.6%

Line 4 of Table 9-5 summarizes the incremental cost for each alternative in Year 2002 dollars. The total incremental cost includes debt service, minimum debt service coverage, and the incremental operation and maintenance expense.

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Line 5 presents the estimated annual water service revenues under existing rates. Black & Veatch is currently modifying its 2001 study and the figures on Line 5 reflect the actual timing of the approved 2002 rate increase. In order for CBU to support any of the given alternatives at current cost levels, current rates would need to be increased by the average percentage indicated on Line 6. For example, for Alternative B, the projected costs for the project would require a 72.5 percent rate increase.

Lines 7 through 10 summarize the projected incremental cost for each option in Year 2008 dollars. Construction costs and operation and maintenance expenses have been inflated at a rate of 3 percent per year.

The 2001 Black and Veatch study projected that with inflation and other planned capital improvements, water rates would need to be increased by 9 percent in Year 2004 and an additional 8 percent in Year 2006. Current revisions to the 2001 study indicate that due to the timing of the 2002 increase and lower than expected sales, the Year 2004 increase will be on the order of 11 percent. The analyses summarized in earlier chapters of this report recommend that the Fullerton project not be built and that the Southeast project is required for Alternative A capital improvements only. Incorporating these recommendations into the rate study indicates that no additional rate increase would be needed in 2006 in the absence of a new WTP project.

The assumed 27.5 percent increase plus projected growth in water sales results in annual revenues of \$10,830,100 for Year 2008 once the Year 2004 rates are adopted. This revenue is shown on Line 11 of Table 9-5. Line 12 illustrates the impact each alternative will have on water rates in Year 2008. The figures shown are the percentages required in Year 2006 (the year of the bond sale) that will generate the additional revenues to meet capital, operational, and bond ordinance requirements. For example, under Alternative B, a 72.8 percent increase is required over adopted Year 2004 rates. Cumulatively, for

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Alternative B, water rates would experience a 98.4 percent increase over current (Year 2002) rates.

The capital financing option used in this analysis was revenue bond financing. To illustrate the impact alternative financing options may have on the level of rate increase required, Table 9-5 has been reproduced assuming SRF-sourced financing. For each alternative, SRF bonding is assumed using an average interest rate of 3.3 percent for a period of 20 years and use of a surety for the debt service reserve requirement. The results of using SRF funding is presented in Table 9-5a and illustrates the impact that financing can have on water rates.

Table 9-5a
Summary of Impact on Water Rates Using SRF Funds

Line No.	Description	Alternatives					
		A	Option to A	B	C	Option 1 to C	Option 2 to C
	Impact on Current Rates						
1	Total Annual Debt Service ^(a)	3,854,000	3,328,000	5,121,000	6,237,000	5,759,000	3,932,000
2	Debt Service Coverage ^(a)	964,000	832,000	1,280,000	1,559,000	1,440,000	983,000
3	Incremental O&M Expense ^(b)	<u>0</u>	<u>0</u>	<u>320,000</u>	<u>840,000</u>	<u>675,000</u>	<u>320,000</u>
4	Total Annual Incremental Cost	4,818,000	4,160,000	6,721,000	8,636,000	7,874,000	5,235,000
5	Projected Yr 2002 Revenues under Existing Rates ^(c)	9,669,700	9,669,700	9,669,700	9,669,700	9,669,700	9,669,700
6	Total Annual Incremental Cost @ Yr 2002 Levels as a Percentage of Revenues under Existing Rates	49.8%	43.0%	69.5%	89.3%	81.4%	54.1%
	Impact on Yr 2008 Rates						
7	Total Annual Debt Service ^(a)	4,338,000	3,745,000	5,758,000	7,020,000	6,482,000	4,425,000
8	Debt Service Coverage ^(a)	1,085,000	936,000	1,440,000	1,755,000	1,621,000	1,106,000
9	Incremental O&M Expense ^(b)	<u>0</u>	<u>0</u>	<u>360,000</u>	<u>945,000</u>	<u>760,000</u>	<u>360,000</u>
10	Total Annual Incremental Cost	5,423,000	4,681,000	7,558,000	9,720,000	8,863,000	5,891,000
11	Projected Yr 2008 Revenues, without Additional Plant, with Rates Adopted Yr 2004 ^(d)	10,830,100	10,830,100	10,830,100	10,830,100	10,830,100	10,830,100
12	Projected Additional Increase in Water Rates for New WTP Plant in Yr 2008.	50.1%	43.2%	69.8%	89.7%	81.8%	54.4%

